PRODUCT ENGINEERING

PUBLISHED MONTHLY

McGRAW-HILL PUBLISHING COMPANY, INC. 330 West 42d Street, New York, N. Y.

▼

INDEX TO VOLUME 6

January to December, 1935

January 1-40
February 41-80
March 81-120
April 121-160
May 161-200
June 201-240
July 241-280
August 281-320
September 321-360
October 361-400
November 401-440
December 441-480

Accidents—Manufacturer's liability for injury caused by defects in product. Leslie Childs 107
Adjustment should be better on machines. F. K. Lawler 26
Aeronautics—Color reactions on the senses for airplanes. Howard Ketcham..*343
Airguide of bakelite *181
Aluminum—Anodized aluminum. R. E. Pettit *292

Appearances and Finishes:

Alloys for die castings. Herbert Chase *379
Anodized aluminum. R. E. Pettit. *292
Color reactions on the senses. Howard Ketcham *343
Designation of surface qualities. R. J. Walker *289
Developments in automobiles. *42; pt. 2 *82
Finish specifications 463
Finishes for zinc and aluminum die-castings. Joseph Fox *216
Getting the right color. Howard Ketcham *299
Guide for non-metallic finishes for central station equipment 337
Materials for household equipment selected for their appearance value.. *425
Plastics in colors that consumers prefer. Howard Ketcham *383
Product appeal through correct color. Howard Ketcham *257
Rhodium surfaces for metal reflectors. Blasius Bart *308
Seven rules for good appearance. Cyril Donaldson 446
Steel castings in welded structures. Clarence Tolan, Jr. *377

Automobiles:

Anti-friction bearings in automobiles. E. Wooler..pt. 1 *310; pt. 2 *390; pt. 3 *470
Anti-friction bearings in 1935 automobiles. R. J. Palmer 147
Design changes in 1936 cars *450
Developments in automobiles. *42; pt. 2 *82
Market analyses of color preferences in automobiles. Howard Ketcham.. *299
Axis inertia determined by graphical method. H. E. Mayrose *108

Bearings:

Anti-friction bearing pulley mountings. H. J. Martin *30
Anti-friction bearings in automobiles. E. Wooler ..... pt. 1 *310; pt. 2 *390; pt. 3 *470
Anti-friction bearings in 1935 automobiles. R. J. Palmer 147
Bearing material for severe service.. pt. 2 *456
Bearing metals for severe service. pt. 1 *362
Bearing requirements in automobile engineers. V. Skillman 362
Copper lead bearings. D. E. Anderson. *363
Cadmium silver copper bearing alloy. L. C. Blomstrom *364
Cadmium nickel bearing alloys. A. J. Phillips *365
Chart for calculating needle bearings. C. P. Nachod (Ref. Bk. Sheets).. 399
Designed for the product. T. L. Robinson *334
Developments in bearing metals in automobiles *48
Information to give when ordering bearings. R. G. N. Evans..... pt. 1 *16; pt. 2 *64
Lubrication of anti-friction bearings. F. Leister, pt. 1 oil or grease? *2; pt. 2 properties affecting temperature *54; pt. 3 oil lubrication.... *91
Lubrication of bearings. J. E. Hyatt.. 149
Lubrication for bearings that seldom get attention *182
Lubrication of sleeve bearings. R. G. N. Evans ..... pt. 1 *448
Meter bearings of beryllium copper. *176
Mirror finish on Timken bearings.... 367
Precision bearings for telescopes.... 96
Sealed bearings for conveyor rolls.. *7
Tabulating ball bearing dimensions. David Fliegelman *149
Water-lubricated rubber bearings. Haushalter & Moffitt *103
Bellows of beryllium copper *176
Beryllium copper. R. W. Carson..... *175
Bicycle frames welded 367
Book reviews.....38, 78, 118, 158, 198, 238, 278, 318, 358, 398, 437, 478
Borer, jig, with optical equipment..... *127
Bread slicer *6
Business machines featured by motor drives *428

Calipers—Spring-ring stresses. J. A. Hall. *229
Camera, high speed *94

Cams:

Cam contours. Hall, Pash, Neklutin. *28
Cam rolls, stresses in. W. J. Hart.. *23
Motions in four bar linkages. J. A. Bradshaw *303
Slot in cam allows drive to carry crank past dead center. J. E. Fenno.... *28

Castings:

Alloys for die castings. Herbert Chase. *379
Beryllium dies for molding plastics 313
Fan and meat chopper redesigned for die-castings *170
Finishing zinc and aluminum die-castings. Joseph Fox *216
Light weight die castings *452
Sodium zinc alloy prevents flaws in non-ferrous castings 192
Solidification affects steel casting design. F. A. Melmoth *136
Steel castings in welded structures. Clarence Tolan, Jr. *377
Cellulose roll feed for cigar wrapping machine. M. G. Demougeot *106
Charts—Charts simplified by using distorted coordinates. C. P. Nachod..... *459
Checkwriter stand redesigned *211
Chopper, meat, redesigned for die castings. *170
Cigar wrapping machine with cellulose roll feed. M. G. Demougeot *106
Clock parts for plaskon *179
Clutches—Over-running clutch refrigerator drive 9
Trunk clutches with throwout yokes stellite faced *170
Cocktail shaker of drawn copper chromium plated *9

Color:

Airplane colors. R. V. Hutchinson.. 466
Color reactions on the senses. Howard Ketcham *343
Getting the right color. Howard Ketcham *299
Plastics in colors that consumers prefer. Howard Ketcham *383
Product appeal through correct color. Howard Ketcham *257
Commutators, stresses in. Arnott & Donaldson *101

Controls.

Air-operated and electrical systems for controlling pressure and temperature. *250
Applying photo-electric controls. R. G. Silbar *166
Bimetal arc control for searchlights. Preston Basset 309
Hydraulic systems for operating machinery..... pt. 1 *284; pt. 2 *330
Openside planer 100% electrified *221
Power shovels controlled by vacuum cylinder *169

Corrosion:

Ford using new rust-proofing process. 312
Rust-proofing in auto industry..... *152
Steam and diesel equipment using more corrosion resisting materials..... *411
Crankshafts, cast. F. J. Walls..... 229

Data, analysis of. R. L. Turner..... 228
Decimal dimensioning 73

Design, Calculations and Examples:

Analysis of stresses in cam rolls. W. J. Hart *23
Anti-friction bearings in automobiles. E. Wooler ..pt. 1 *310; pt. 2 *390; pt. 3 *470
Bearings designed for the product. T. L. Robinson *334
Built-in meters and gages as original equipment *242
Business machines featured by motor drives *428
Calculations for torsional vibration. Donaldson & Arnott *209
Chart for calculating needle bearings. C. P. Nachod (Ref. Bk. Sheets).. 399
Chart for unit and total weight and number of pieces. C. P. Nachod (Ref. Bk. Sheets) 159; correction 189
Charts simplified by using distorted coordinates. C. P. Nachod..... *459
Checkwriter stand redesigned *211
Cooperation on new design. J. E. Hyler 469
Designing chain drives..pt. 1 *162; pt. 2 *219; pt. 3 *253; pt. 4 *295
Developments in automobiles. *42; pt. 2 *82
Farming and mining machinery trends. *417
Fitting equations to a curve. C. J. Schilling *68
Food and packaging machinery using more variable speed drives *414
Gear design calculations. C. S. DeLate; pt. 1 spur gears *39; pt. 2 bevel gear teeth *119; pt. 3 spur gears 199
Gear design for minimum noise. W. G. Meyers *259
Hydraulic control systems and circuits. Hans Ernst.....pt. 1 *122; pt. 2 *171
Instrument designers use expensive metals *430
Lighting equipment built-in for better seeing.....pt. 1 *10; pt. 2 *61; pt. 3 *144; pt. 4 *214
1935 survey of changes and trends.. *402
Openside planer 100% electrified... *221
Printing, textile and other manufacturing machinery *408
Resistance welding and the metal vacuum tube. R. J. Bondley.... *374
Six years of progress in machine tool design *322
Solidification affects steel casting design. F. A. Melmoth *136
Stampings. J. K. Olsen, pt. 2 design of drawn parts *13; pt. 3 estimating blanks for drawn parts..... *88
Standardized worm gear sets. R. V. Hutchinson *185
Streamlined trains *202
Stresses in commutators. Arnott & Donaldson *101
Toledo scale modernized *325
Transportation vehicle design changes. *421
U-leather packings. E. J. Tangerman. *224
Dials of plaskon *181
Die-making machine with built-in light.. *95
Differential threads. C. W. Hinman..... *307
Drawings—Double dimensioning. J. S. Carpenter 29
Drawing and pattern numbers. Smith, Brown *188
Dredge bucket arc-welded *126
Drills—Herbert sensitive drilling machine with magnifying lens *8

*Illustrated

Drives:

Business machines featured by motor drives *428
Designing chain drives. pt. 1 *162; pt. 2 *218; pt. 3 *253; pt. 4 *295
Farming and mining machinery trends *417
Food and packaging machinery using more variable-speed drives *414
Machine tool designers stress hydraulic drives and electrification ..*404
Short center belt drives. E. N. Kemler (Ref. Bk. Sheets) *79
Turning effort and crosshead acceleration in crank drives. R. V. Hutchinson (Ref. Bk. Sheets) ..*319
Types of transmission units that are receiving attention of designers. ..*410
Variable speed drives in modern machines *339
Dryer, aluminum 129

Editorials:

As the machine—so is the product... 321
Competition for leadership 121
Croesus and his gold 361
Don't blame the purchasing agent.. 441
Give them credit 401
Objections over-ruled 81
Responsibility of professors 281
Science of colors 241
Shall patent laws be scrapped? 161
Time is ripe 42
Why wait for competition? 201
World affairs 1
Electrification in machine tools..... *404
Electroplating unit has molded plastic cabinet *246
Elevator cable controlled by torque motor 7
Engineers' Council on Professional Development 152

Engines:

Developments in automobile engines *44; pt. 2 *82
Diesel with new fuel injection system *249
Engine horsepower for medium and high speeds. W. G. Meyers (Ref. Bk. Sheets) 320
Radial diesel engine for rail cars.... *128
Steam and diesel equipment using more corrosion resisting materials..... *411

Facings, measuring performances of friction. E. R. Fish *467
Fan, Wagner, redesigned for die-casting *170
Farming and mining machinery trends.... *417
Federal Housing Administration loans.... 353
Feed, cellulose roll, for cigar wrapping machine. M. G. Demougeot *106
Feeder, electro-magnetic *127
Figuring machine of durez *179
Food and packaging machinery using more variable speed drives *414

Gages—Built-in meters and gages as original equipment *242

Gears:

Design of gears for minimum noise. W. G. Meyers *259
Gear design calculations. C. S. DeLate. pt. 1 spur gears *39; pt. 2 bevel gear teeth *119; pt. 3 spur gears 199
Length of gear tooth contact. Johnson, Tarbell *389
Line contact in worm gears. Hutchinson, Wilder *148
Modified gears for increased center distance. Hans Schemm *442
Nickel-alloy gear materials and their heat-treatments. Sands & Walls.. *370
Noiseless gears. F. L. Creager..... *228
Number of teeth in contact. F. V. Tarbell (Ref. Bk. Sheets)..... 359
Reversing gear mechanisms. Adam Fredericks.....pt. 1 *150; pt. 2 *230
Rule for worm gear efficiency verified 313
Special centers with standard cutters. A. F. Barker 307
Special centers with standard cutters. R. V. Hutchinson 227
Standardized worm gear sets. R. V. Hutchinson *185
Standards for helical gears. F. A. Mickle 69
Worm gear contact. R. V. Hutchinson 187

Glass bends like steel 353
Glass table *7
Grinder, Hand-ee *367

Handles, wood. J. E. Hyler 147
Heat treatment cost in selecting alloys.. 153
Heat treatment of nickel alloy gear materials. Sands & Walls *370
Hubs, propeller, of beryllium copper.... *176
Hydraulic control systems and circuits. Hans Ernst.....pt. 122; pt. 2 *171
Hydraulic drive for flat plate ironer.... 127
Hydraulic systems for operating machinery.....pt. 1 *282; pt. 2 *330

Instrument design. Bachman, Gepfert... 266
Instrument designers use expensive metals.*430
Instruments with integral lighting. L. J. Lunas *187
Iron—Cast iron. MacKenzie, Lessells.. 67
Iron, electric, temperature indicated for.. *287
Ironer, flat plate, with hydraulic drive.. 127

Kettle heater, electric *168
Kitchen of the future *329

Light built-in shearing machine..... *212
Lighting equipment built-in for better seeing.....pt. 1 *10; pt. 2 *61; pt. 3 *144; pt. 4 *214
Lighting, integral, in instruments. L. J. Lunas *187
Lighting on machine tools. R. C. Heinmiller *267
Lock nuts, screw locking devices and drive screws *20
Locomotives—Bolted frame for Brookville locomotive *368
New designs of railway equipment compel more buying *32

Lubrication:

Anti-friction bearing lubrication. F. Leister, pt. 1 oil or grease? *2; pt. 2 properties affecting temperature *54; pt. 3 oil lubrication.... *91
Bearing lubrication *182
Bearing lubrication. J. E. Hyatt..... 149
Feeding rate of oil cups. J. I. Clower. *189
Lubrication of sleeve bearings. R. G. N. Evans .....pt. 1 *448
Periodic lubrication eliminated *452
Water-lubricated rubber bearings. Haushalter & Moffitt *103

Machine tool designers stress hydraulic drives and electrification *404
Machine tool show 393

Materials:

Alloys for die castings. Herbert Chase *379
Bearing metals for severe service... pt. 1 *362; pt. 2 *456
Bearing requirements in automobile engineers. V. Skillman 362
Copper lead bearings. D. E. Anderson *363
Cadmium-silver-copper bearing alloy. L. C. Blomstrom *364
Cadmium-nickel bearing alloys. A. J. Phillips *365
Developments in automobiles *42; pt. 2 *82
Household equipment materials selected for their appearance value.. *425
Laminated sheets bonded on steel.... 73
Length of material for 90 deg. forms. pt. 1. J. K. Olsen (Ref. Bk. Sheets) 479
Materials used more extensively in 425 companies 433
Modern materials for pressure vessels 232
Nickel-alloy gear materials and their heat-treatments. Sands & Walls.. *370
Steam and diesel equipment using more corrosion-resisting materials *411

Mechanisms and Constructions:

Designing optical systems for sharp images. O. K. Kaspereit *306
How to smplify charts by anamorphosis. C. P. Nachod *459
Hydraulic systems for operating machinery.....pt. 1 *282; pt. 2 *330
Lateral vibration of shafts. L. F. Moody.. pt. 1 *57; pt. 2 *98; pt. 3 *142
Logarithmic mean. O. E. Brown (Ref. Bk. Sheets) 440
Modified gears for increased center distance. Hans Schemm *442
Motions in four bar linkages. J. A. Bradshaw *303
Reversing gear mechanisms. Adam Fredericks.....pt. 1 *150; pt. 2 *230
Safety fastenings—lock nuts and screw locks *20
Stress in a rotating disk. O. E. Brown (Ref. Bk. Sheets) 439
Stresses in cantilever beams. C. P. Nachod (Ref. Bk. Sheets) *270
Thermostatic mechanisms..pt. 1 *190; pt. 2 *270; pt. 3 *350
Torque of spiral springs. C. P. Nachod (Ref. Bk. Sheets) *280
Unbalanced pull in electrical machines. B. A. Rose *376
Variable speed drives in modern machines *339
Velocity and force diagrams. G. B. Karelitz *133
Metal Products Exhibit opens in New York *392

Metals:

Alloys for die-castings. Herbert Chase *379
Bearing material for severe service.. pt. 2 *456
Bearing metals for severe service. pt. 1 *362
Bearing requirements in automobile engines. V. Skillman 362
Beryllium copper. R. W. Carson..... *175
Cadmium-silver-copper bearing alloy. L. C. Blomstrom *364
Cadmium-nickel bearing alloys. A. J. Phillips *365
Copper-lead bearings. D. E. Anderson *363
Instrument designers use expensive metals *430
Monel alloy contains aluminum..... 113
Nickel alloy gear materials and their heat treatments. Sands & Walls.*370
Sodium zinc alloy prevents flaws in non-ferrous castings 192

Metering orifice of durez *180
Meters—Built-in meters and gages as original equipment *242
Milling machine has teeterboard motor support *94
Milling machines—Modern hydraulic control systems and circuits. Hans Ernst.....pt. 1 *122; pt. 2 *171
Mining and farming machinery trends....*417
Mixer with hollow motor shaft 248
Motions in four bar linkages. J. A. Bradshaw *303

Motors:

Electronic control for 400 hp. motor 153
Individual frameless motor in which motor shaft is extension of the machine driving member. R. H. Clobes *66
Motor for stone cutting. R. H. Davis..*347
Motor support on milling machine.... *94
Torque motor for shifting elevator control cable 7

New materials and parts....34, 74, 114, 154, 194, 234, 274, 314, 354, 394, 434, 474
Nomenclature difficulties. E. J. Tangerman 309
Nomograms—index lines. C. P. Nachod.*148

Oil heater with adjustable controls.....*246
Optical instrument *9
Optical systems. Nachod, Hitchcock....*109
Optical systems designed for sharp images. O. K. Kaspereit *306

Packings, leather. O. B. Scheer 267
Packings, leather, for hydraulic systems. G. M. Dorr *139
Packings, U-leather. E. J. Tangerman.. *224
Paints—Guide for non-metallic finishes for central station equipment 337
Storing and preparation of paints.... 338

Parts and Units:

Air-operated and motorized control valves *250
Anti-friction bearing pulley mountings. H. J. Martin *30
Beryllium copper applications. R. W. Carson *175
Business machines featured by motor drives *428
Farming and mining machinery trends.*417
Food and packaging machinery using more variable speed drives *414
Hollow and socket head screws..... *130
Information to give when ordering bearings. R. G. N. Evans..... pt. 1 *16; pt. 2 *64
Leather packings for hydraulic systems. G. M. Dorr *139
Lubrication of anti-friction bearings. F. Leister, pt. 1 oil or grease? *2; pt. 2 properties affecting temperature *54; pt. 3 oil lubrication.... *91
Lubrication of sleeve bearings. R. G. N. Evans.....pt. 1 *448
Machine tool designers stress hydraulic drives and electrification..*404
Openside planer 100% electrified.... *221
Plastics for the decorative effect. Herbert Chase *178
Printing, textile and other manufacturing machinery *408
Roller applications. Adam Fredericks *70
Spring data. M. G. Demougeot.... *110
Unit parts used more extensively in 425 companies 433
Water-lubricated rubber bearings. Haushalter & Moffitt *103
Patents—Patent laws to be scrapped. H. N. Booker 468
Photo-electric cells—Applying photo-electric controls. R. G. Silbar *166
Pinion rougher *126
Pipe length and bursting pressure. Victor Tatarinoff 387
Pitting of stainless steel by leather. J. N. Smith *465
Planer, heavy duty *247
Planer, openside, electrified *221

Plastics:

Automobile parts made from colored plastics *300
Beryllium dies for molding plastics.. 313
Colors for plastics. Howard Ketcham. *383
Metal and plastics exhibit in New York *392
Plastics for the decorative effect. Herbert Chase *178
Toledo scale modernized *325
Valves have plastic parts for corrosion resistance *368
Plating without polishing 272
Plating, zinc, gives bright finish..... 393
Pocket case of durez *180
Preheater for food products *96
Press slide, rigid *286
Presses—Press brake with hydraulic piston. *129
Product development. Carl Heyel 348
Product Engineering—historical summary. 1
Pulley mountings, anti-friction bearing. R. J. Martin *30
Pumps—Gasoline pumping unit. F. A. Westbrook *227
Pyrometers *262

*Illustrated

Radio tubes inspected by X-rays....*248
Radio tubes of metal *169
Range, arc welded *97
Range, oil, improved in appearance....*366

Reference Book Sheets:

Chart for calculating needle bearings. C. P. Nachod 399
Chart for unit and total weight and number of pieces. C. P. Nachod 159; correction 189
Engine horsepower for medium and high speeds. W. G. Meyers.... 320
Equivalent diameter for a stepped shaft. Donaldson & Arnott.... 239
Gear design calculations. C. S. De Late, pt. 1 spur gears *39; pt. 2 bevel gear teeth *119; pt. 3 spur gears 199
Length of material of 90 deg. forms, pt. 1 479
Logarithmic mean. O. E. Brown.... 440
Number of teeth in contact. F. V. Tarbell 359
Short center belt drives. E. N. Kemler *79
Stress in a rotating disk. O. E. Brown 439
Stresses in cantilever beams. C. P. Nachod *279
Torque of spiral springs. C. P. Nachod *280
Turning effort and crosshead acceleration in crank drives. R. V. Hutchinson *319
Values of 1/d⁴ for shaft diameters from 2 to 10 in. Donaldson & Arnott 240
Reflectors, metal, rhodium surfaces. Blasius Bart *308

Refrigeration and Refrigerators:

Evaporator for refrigerator, resistance welded *213
Ice machine with stellite blades....*328
New models of refrigerators.... *72
Rhodium surfaces for metal reflectors. Blasius Bart *308
Roller mountings. Adam Fredericks.... *70
Rubber—Improved synthetic rubber 73
Mountings for bolt connections and bracket *248
Safety fastenings — lock nuts and screw locks *20
Saw, electric arc. M. C. Smith *26
Scale, Toledo, modernized *325
Scales with spot heater *288
Screens, electro-deposited 352
Screw locking devices, lock nuts and drive screws *20
Screw machine, Britain-Gridley *327
Screws—Hollow and socket-head screws..*130
Seal, hub, of cork and copper, for tractor.*129
Searchlights, bimetal arc control for. Preston Basset 309
Separators, magnetic *97
Setscrews, tight. F. W. Shaw *468

Shafts:

Calculations for torsional vibration. Donaldson & Arnott *209
Distortion of hollow shafts and pins. J. S. Carpenter *67; correction.... 189
Equivalent diameter for a stepped shaft. Donaldson & Arnott (Ref. Bk. Sheet) 239
Lateral vibration of shafts. L. F. Moody pt. 1 *57; pt. 2 *98; pt. 3 *142
Values of 1/d⁴ for shaft diameters from 2 to 10 in. Donaldson & Arnott (Ref. Bk. Sheet) 240
Shearing machine with built-in light....*212
Shock absorber *248
Shovel power, controlled by vacuum cylinder *169
Speed reducers—Reducer ratings now standardized 312
Spline, tapered, for keying *95

Springs:

Electrical contact springs of beryllium copper *177
Instrument springs of beryllium copper *177
Retaining devices. Shaw, Fredericks..*27
Spring data. M. G. Demouzeot *110
Torque of spiral springs. C. P. Nachod (Ref. Bk. Sheets) *280
Stampings—Design of drawn parts. J. K. Olsen, pt. 2 *13; pt. 3 estimating blanks for drawn parts *88

Standardization:

Comparison of British and American standards for helical gears. F. A. Mickle 69
Drawings standard urged 352
Standardization for detailed parts. E. R. Harris 68

Steel:

Alloy steels more than 11 years old. 272
Homogeneous steel 33
Redesigning for high strength steel sheets. V. H. Lawrence *51
Solidification affects steel casting design. F. A. Melmoth *136
Stone cutting planer. R. H. Davis....*347
Stove, kerosene, with built in humidifier..*95
Stove, modernized appearance *286
Stove, welded 211

Stresses:

Analysis of stresses in cam rolls. W. J. Hart *23
Calculating stresses in commutators of the V-ing type. Arnott & Donaldson *101
Cantilever beam stresses. C. P. Nachod (Ref. Bk. Sheets) *279
Spring ring stresses. R. V. Hutchinson *348
Stress in a rotating disk. O. E. Brown (Ref. Bk. Sheets) 439
Unbalanced pull in electrical machines. B. A. Rose *376
Superchargers and generators in automobiles *50

Table of glass disks and cylinders.... *7
Teeth made by electroplating *246
Telegraph call box new design *369
Television receivers for the home.... *212
Thermometers *262
Thermometers, bimetal. J. B. Dowden....*388
Thermos.at *288
Thermostatic mechanisms....pt. 1 *190; pt. 2 *270; pt. 3 *350
Toaster of bakelite *178
Tolerances and clearance limits. F. J. Potter *453
Torsional strength effected by length. Victor Tatarinoff *347
Tractor hub seal of cork and copper....*128

Trains—streamlined:

New designs of railway equipment compel more buying *32
When the railroads go modern *202
Transmission—Developments in automobiles *82
Transportation vehicle design changes....*421
Tungsten carbide bar tested for wear.... 32

Vacuum tubes made possible by resistance welding. R. J. Bondley *374

Valves:

Air-operated and motorized control valves *250
Developments in valves in automobiles *49
Flushing valves for marine service..*368
Thermoelectric operation for valves..*451
Velocity and force diagrams. G. B. Karelitz.*133
Vibration, calculations for torsional. Donaldson & Arnott *209

Wattages reduced. Stiles Beggs 349
Weight—Chart for unit and total weight and number of pieces. C. P. Nachod (Ref. Bk. Sheets) 159; correction 189

Welding:

Arc welding in conveying equipment. A. F. Davis *466
Projection welder *168
Resistance welding and the metal vacuum tube. R. J. Bondley *374
Steel castings in welded structures. Clarence Tolan, Jr. *377
Tantalum welding *8
X-rays to inspect welded radio tubes.*249
Wood impregnated with resin for commercial products 272
Wrenches of beryllium copper *177

▼

AUTHORS

ADAMS, WILBUR H. Future of product design 266
Anderson, D. E. Copper-lead bearings....*363
Arnott, J. R. and C. S. Donaldson. Equivalent diameter for a stepped shaft (Ref. Bk. Sheets) 239
Simplified calculations for torsional vibration periods *209
Stresses in commutators *101
Values of 1/d⁴ for shaft diameters for 2 to 10 in. (Ref. Bk. Sheet) 240

BART, BLASIUS. Rhodium surfaces for metal reflectors *308
Barker, A. F. Special centers with standard cutters 307
Basset, Preston. Bimetal arc control.... 309
Beehman, W. C. Plea to instrument makers 266
Beggs, Stiles. Reducing wattages 349
Bland, P. N. Special centers with standard cutters 188
Bliss, Collins. Engineering index appeals for support 407
Blomstrom, L. C. Cadmium-silver-copper bearing alloy *364
Bondley, R. J. Resistance welding and the metal vacuum tube *374
Booker, H. N. Patent laws to be scrapped 468
Bradshaw, John A. Motions in four-bar linkages *303
Brown, O. E. Graphical averages 188
Logarithmic mean (Ref. Bk. Sheet).. 440
Brown, W. S. Drawing and pattern numbers 188

CARPENTER, JOHN S. Distortion of hollow shafts and pins ....*67; correction 189
Double dimensioning 29
Carson, Robert W. Beryllium copper...*175
Chase, Herbert. Plastics for the decorative effect *178
Which alloy for die-castings?.....*379
Childs, Leslie. Manufacturer's liability for injury caused by defects in product 107
Clobes, R. H. Tomorrow's electro-machine tool *66
Clower, James I. Feeding rate of oil cups.*189
Creager, F. L. Noiseless gears *228

DAVIS, A. F. Arc welding in conveying equipment *466
Davis, R. H. Small diameter motor for stone cutting *347
De Late, Charles S. Gear design calculations, pt. 1 spur gears *39; pt. 2 bevel gear teeth *119; pt. 3 spur gears 199
Demouzeot, M. G. Cellulose roll feed *106
Spring data *110
Donaldson, Cyril. Seven rules for good appearance 466
Donaldson, C. S., and J. R. Arnott. Equivalent diameter for a stepped shaft (Ref. Bk. Sheet) 239
Simplified calculations for torsional vibration periods *209
Stresses in commutators *101
Values of 1/d⁴ for shaft diameters from 2 to 10 in. (Ref. Bk. Sheet) 240
Dorr, George M. Leather packings for hydraulic systems *139
Dowden, J. Blair. Increasing sensitivity of bimetal thermometers *388

ERNST, HANS. Modern hydraulic control systems and circuits.... pt. 1 *122; pt. 2 *171
Evans, Robert G. N. Information to give when ordering bearings.... pt. 1 *16; pt. 2 *64
Lubrication of sleeve bearings, pt. 1 *448

FENNO, J. E. Rectilinear to rotary motion *28
Fish, E. R. Measuring performances of friction facings *467
Fliegelman, David. Tabulating ball bearing dimensions *149
Fox, Joseph. Finishing zinc and aluminum die-castings *216
Fredericks, Adam. Retaining devices *27
Reversing gear mechanisms.... pt. 1 *150; pt. 2 *230
Roller applications *70

GEPFERT, J. H. Instruments in design. 266
Golber, H. E. Shaft positions in oil film bearings 267

HACK, C. H. Lead alkali bearing metal *456
Hall, James A. Cam contours.... 28
Special centers with standard cutters 149
Spring-ring stresses *229
Hall, Leo G. Strength of steel 107
Ham, C. W. Friction in screw threads... 188
Harris, E. R. Standardization of detailed parts 68
Hart, George W. Point or line contact in worm drives? 67
Hart, W. J. Analysis of stresses in cam rolls *23
Haushalter, F. L., and L. Q. Moffitt. Water-lubricated rubber bearings *103
Heimmiller, R. C. Localized lighting on machine tools *267
Heyel, Carl. Procedure in product development 348
Hibben, S. G. Built in lighting 108
Hinman, C. W. Differential threads....*307
Hitchcock, R. C. Laying out optical systems *109
Hutchinson, Roland V. Airplane colors.. 466
Line contact in worm gears.... 147
Practical professors 27
Special centers with standard cutters 227
Spring ring stresses *348
Standardized worm gear sets *185
Turning effort and crosshead acceleration in crank drives (Ref. Bk. Sheets) *319
Worm gear contact 187
Hyatt, J. E. Bearing lubrication 149
Hyler, John E. Cooperation on new design 469
Tight setscrews 349
Wood handles 147

*Illustrated

JOHNSON, C. A. Length of gear tooth contact *389
Special centers with standard cutters 189

KASPEREIT, O. K. Designing optical systems for sharp images..... *306
Karelitz, G. B. Simplified velocity and force diagrams *133
Kemler, E. N. Short center belt drives (Ref. Bk. Sheets) *79
Ketcham, Howard. Color reactions on the senses *343
Getting the right color *299
Plastics in colors that consumers prefer *383
Product appeal through correct color. *257

LAWLER, F. K. Better adjustments... 26
Lawrence, V. H. Factors in redesigning for high strength steel sheets.. *51
Leister, F. Lubrication of anti-friction bearings, pt. 1 oil or grease? *2; pt. 2 properties affecting temperature *54; pt. 3 oil lubrication *91
Lessells, John M. Elastic modulus of cast iron 68
Lunas, L. J. Integral lighting in instruments *187

MACKENZIE, JAMES T. Elastic modulus of cast iron 67
Malin, B. S. What is industrial design? 29
Martin, Henry J. Anti-friction bearing-pulley mountings *30
Mayrose, Herman E. Graphical determination of principal axes *108
McIntosh, James. Designated drawings.. 107
Melmoth, Frederick A. How solidification affects steel casting design.... *136
Meyers, Willis G. Design of gears for minimum noise *259
Engine horsepower for medium and high speeds (Ref. Bk. Sheets).. 320
Mickle, F. A. Standards for helical gears 69
Moffitt, Lucian Q., and F. L. Haushalter. Water-lubricated rubber bearings *103
Mohr, W. W. Dimensions wanted for optical extensometer *469
Moody, Lewis F. Lateral vibration of shafts.pt. 1 *57; pt. 2 *98; pt. 3 *142

NACHOD, CARL P. Chart for calculating needle bearings (Ref. Bk. Sheets) 399
Chart for unit and total weight and number of pieces (Ref. Bk. Sheets) 159; correction 189
Charts simplified by using distorted coordinates *459
Index lines on nomograms *148
Laying out optical systems *109
Stresses in cantilever beams (Ref. Bk. Sheets) *279
Torque of spiral springs (Ref. Bk. Sheets) 280
Neklutin C. N. Cam contours *29

OLSEN, J. K. Length of material for 90 deg. forms, pt. 1 (Ref. Bk. Sheets) 479
Stampings, pt. 2 design of drawn parts *13; pt. 3 estimating blanks for drawn parts *88

PALMER, R. J. Anti-friction bearings in 1935 automobiles 147
Pash, Robert, Cam contours 28
Pettit, R. E. Characteristics of anodized aluminum *292
Phillips, A. J. Cadmium-nickel bearing alloys *365
Potted, F. J. Tolerances and clearance limits *453

ROBINSON, T. L. Bearings designed for the product *334
Rose, B. A. Unbalanced pull in electrical machines *376

SANDS, J. W., and F. J. Walls. Nickel alloy gear materials and their heat-treatments *370
Scheer, O. B. Too much credit for leather packings 267
Schelling, C. J. Fitting equations to a curve *68
Schemm, Hans. Modified gears for increased center distance *442
Shaffer, H. J. Federal graphited bearings *457
Shaw, Francis W. Retaining devices.... *27
Tight setscrews *468
Silbar, Robert G. Applying photo-electric controls *166
Skillman, V. Bearing requirements in automobile engines 362
Smith, Hubert G. Drawing and pattern numbers *188
Smith, J. N. Pitting of stainless steel by leather *465
Smith, M. C. Sawing with an electric arc *26

TANGERMAN, E. J. Confused nomenclature 309
Design proportions for U-leather packings *224
Tarbell, F. V. Length of gear tooth contact 389
Number of teeth in contact (Ref. Bk. Sheets) 359
Tatarinoff, Victor. Effect of pipe length on bursting pressure 387
Effect of specimen length on test data. *347
Tolan, Clarence, Jr. Steel castings in welded structures *377
Turner, R. L. Analysis of data (chart) 228

UNDERWOOD, C. A. Swaging 68

WALKER, ROBERT J. Designation of surface qualities *289
Walls, F. J. Cast crankshafts 229
Walls, F. J., and J. W. Sands. Nickel alloy gear materials and their heat-treatment *370
Westbrook, F. A. Standard equipment for special purposes *227
Wilder, Arthur L. Line contact in worm gears *148
Special gears with standard cutters.. 268
Wooler, E. Anti-friction bearings in automobiles...pt. 1 *310, pt. 2 *390; pt. 3 *470

*Illustrated